

ABSTRACT

This invention teaches a way for the shield to shield (S1-S2) distance of a magnetic read head to be reduced. The key feature is that the upper and lower dielectric layers D1 and D3, which are normally pure aluminum oxide, have each been replaced by a bilayer dielectric, which consists of aluminum oxide in contact with the shield layer followed by a layer of a high voltage breakdown material. For D1 this layer may be either tantalum oxide or tantalum nitride while for D3 our preferred material has been tantalum oxide. The addition of the two high breakdown layers allows the thickness of the upper and lower dielectric layers to be reduced without having to reduce the S2-S2 voltage difference.